Policy Implications Report

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Policy Implications Report

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Report Outline

This report offers an overview of the impact of policy sensitive parameters on the profitability of residential energy refurbishments in the narrow sense. In the wider sense, parameters which affect the profitability assessment of measures or their variants are discussed. Moreover, the report identifies how rules and regulations can be calibrated to increase the odds of investments in energy efficiency within the European rental housing market.

Using the RentalCal tool, market experiences from eight different European countries are compared and combined. This allows for comparative learning regarding the underlying policies of taxes, subsidies and rent regulations.

This report starts with a short introduction into the RentalCal framework and a motivation of the analysis. In the second section, an overview of the RentalCal framework parameters is listed, in which each parameter is discussed and explained with respect to its relative importance and regarding the influence of policymakers on each. In section three, the outcomes of international comparisons are discussed across the eight markets that are part of the RentalCal project and translate the implications of these comparisons into key policy recommendations. We conclude this report with the main insights of this comparative analysis, and offer an overview of related reports as further readings.

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1 Introduction

Residential energy efficiency analyses are far from straightforward. A wide plethora of considerations needs to be explored, when analyzing the costs and benefits of these investments. There are benefits that can be defined in a traditional way as monetary returns (microeconomic benefits) and others as environmental, climate and macroeconomic benefits. However, this doesn't collect and describe all benefits. Thus, the project tried to capture additional benefits for tenants (such as improved thermal comfort in summer and winter, potentially improved indoor air quality), as well as for landlords (such as extension of the building envelope's service life, improvement of lettability and marketability, positive impact on value stability and development) beyond the customary approaches and take them into account. In all cases, various institutional settings and dwelling-specific details need to be considered simultaneously, which isn't an easy task.

The RentalCal tool offers a framework for European landlords, that includes national and regional settings to absorb various local tax and legal requirements and adjusts these to the status of the tool user identity. This way, the RentalCal tool simplifies the complex process of information gathering and cost- benefit balancing, while ensuring all relevant inputs are included and weighted objectively. On the output side, advancements and improvements are implemented as well. Relevant results are presented according to the perspectives of landlords, tenants and environment respectively. Key performance indicators (KPIs) are customised regarding the relevant actor group's (investors, housing companies, private landlords) knowledge, customs and requirements and can be associated with them. Moreover, further target groups like politicians and energy consultants are reached and supported.

This policy implication report builds on the merits of this RentalCal tool. Here, the tool will be used to assess the sensitivity of residential energy efficiency investments to the European variation in institutional settings, with a focus on the impact of policy sensitive parameters. In other words, this analysis compares the standard and most common values of the key RentalCal input variables across eight European markets and uses the tool settings to translate this international variation into implications for the financial return on energetic refurbishment investments. This way, this analysis presents an assessment of which factors might contribute to the profitability of an energy efficiency investment. Moreover, this report also offers studies and references to national reports on energy efficiency policy across Europe that can inspire new thoughts on future regulations.

This analysis on the international variation of regulations is executed without aiming for refurbishment outcomes. The academic literature has already shown that over-subsidization of energy efficiency may well lead up to net welfare losses (the expense of subsidies exceeding the benefits of energy savings)[1]. On the other hand, the benefits of measures directed at savings of energy resources and environmental protection are frequently underestimated. By taking external effects into account, enhanced investments and grants might turn out to be profitable. In this respect, the discussion is contradictory. In this situation in particular, there is a demand for transparent bases and tools for decision-making support. Funding programmes also might be interpreted as a means of sharing external benefits among the society and individual owners in this context. Hence, results ought to be interpreted as mere sensitivity analysis, where the odds of positive refurbishment outcomes are being related to the highest (max) and lowest (min) values of input variables across the eight markets. Here,

[1] See for instance McKibbin et al. (2011) and Alcott (2015) for a full discussion on the effects and effectivity of energy efficiency subsidization in residential markets.

special emphasis is given to the input variables that can be directly influenced by governments, to help policymakers to optimize their policy decisions.

This report consists of four sections. The report starts by listing the international variation of input default values. Next, the effects of the reported spread in values are analyzed and the sensitivity of the RentalCal tool outcomes to this variation is assessed. Finally, the most important lessons are listed and insights regarding local energy policies not explicitly included within the RentalCal tool are given. There is also a conclusion of the most important insights from this sensitivity analysis, which can help policymakers to (re)consider their own local regulations, taxes and incentives for stimulating energy efficiency refurbishments.

The report ends with an appendix of a series of local studies on energy efficiency policies gathered from the partners' professional experiences (Appendix A). Furthermore a list of policy insensitive tool variables is presented (Appendix B) as well as the national situation of energy conservation policies and incentive systems in the participating countries (Appendix C).

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2 RentalCal tool policy sensitive input variables

The RentalCal tool absorbs numerous factors and considerations, all needed to make a fair ex-ante analysis of the cost-benefits tradeoff of residential energy efficiency refurbishments. The tool is designed to combine inputs regarding the property owner, the dwellings, the refurbishments and the required financing, but also regarding the local housing market and the outlook of rents and (energy) prices. This collection of inputs varies greatly across dwellings, but also across markets, as some input are policy related and can therefore take different values in each market. In this report, these input data have been examined in great detail. The first effort was to qualify which inputs are policy sensitive.

In the table below, a list of policy-related input data is listed. After this identification, each variable has been studied regarding its influence on one of the most central performance indicators in the RentalCal tool – the return on equity (ROE) – listed in the second column. The input data are listed in the order of importance, which is determined by the strength of the influence each has on the ROE outcome (column three). In other words, the most important input data are listed on top. In the fourth column, a short comment is given of how each input item is included into the model. Finally, in the fifth and final column, the relevance for policymakers is discussed. This is a short answer to the question – what can policymakers do to enhance energy efficiency retrofits based on this specific data item?

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Table 1: Overview of policy sensitive input variables

Selected tool input variable (policy sensitive)	Influence on RoE (tool based)	Strenght of influence on RoE	Comment	Relevance for policy makers
Interest rate of subsidized loans	lower interest rate leads to higher RoE (and vice versa)	strong	depending on difference of subsidized interest rate to individual borrowing rate	Offering of sound financial incentives in funding programs
Repayment bonus	higher repayment bonus leads to higher RoE (and vice versa)	strong	combination of a grant with a subsidized loan	Offering of sound financial incentives in funding programs
Resulting rent increase after retrofit	higher rent increase lead to higher RoE (and vice versa)	strong	depending on rent increase mechanism and/or green premiums	Change in rent setting rules
Expected amount of eligible grants	higher grant leads to higher RoE (and vice versa)	strong	grants are treated as additional rental income	Offering of sound financial incentives in funding programs
Expected volume of subsidized loans	higher amount of subsidized loan leads to higher RoE (and vice versa)	moderate	depending on difference of subsidized interest rate to individual borrowing rate	Offering of sound financial incentives in funding programs
Marginal taxation rate (on rental income)	lower tax rate leads to higher RoE (and vice versa)	moderate	depending on additional rental income	Change in taxation rules
Value-Added Tax (VAT) deductibility	VAT deduction leads to higher RoE (and vice versa)	moderate	no sensitivity (only yes or no)	Change in taxation rules
Expected growth rate for net rent	higher growth rate leads to higher RoE (and vice versa)	moderate	depending on the possibility of future rent adjustments (independent from rent increase after refurbishment)	Change in rent setting rules
Energy cost savings (energy costs before minus energy costs after refurbishment)	higher savings (rent increase) lead to higher RoE (and vice versa)	moderate	only if landlords contribute to heating costs (e.g. gross rent) or if rent increase is linked to energy cost savings	Change in distribution of running costs and/or rent setting rules
Change in annual maintenance, inspection and repair costs (non-reimbursable)	lower non-reimbursable annual cost leads to higher RoE (and vice versa)	moderate	depending on distribution of running cost between landlord and tenant	Change in distribution of running costs
Depreciation rate	higher depreciation rate leads to higher RoE (and vice versa)	moderate	depending on individual tax rate and amount of rental income	Change in depreciation rules
National VAT rate	lower VAT rate leads to higher RoE (and vice versa)	weak	depending on country selection	Reduction of VAT rate for energy efficiency investments
Period (term) of the subsidized loans	longer term of subsidized loan leads to higher RoE (and vice versa)	weak	due to longer fixed reduction of interest rate	Offering of sound financial incentives in funding programs

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Among others, it becomes clear that there is a target conflict between the improvement of profitability of energy saving measures for investors on the one hand and the issue of affordability of living space for tenants on the other hand. Further research is required here.

The four strongest input variables are the interest rate of subsidized loans, the repayment bonus, the potential rent increase due to the refurbishment, and the expected amount of eligible grants. Four financial variables that can be incentivized by policymakers to strengthen the case of energy efficiency retrofits by; lowering the interest rates on subsidized loans, by allowing for high rent increases after energetic refurbishments, and by increasing repayment bonuses and grant amounts. Within the RentalCal tool, these three adjustments turn out to have a strongly positive effect on the consequential ROE.

In yellow, a list of seven more variables is highlighted. These are input variables that policymakers can tweak to stimulate energy retrofits. But in this case, the impact of these variables is less pervasive than the four on top. Obviously, enabling landlords to access larger subsidized loan amounts will help to drive up the project ROE, but less so than a grant, as loans need to be repaid while grants are awarded.

In this ‘moderate’ category, tax related items are to be found as well. This matters, but at the same a smaller cross-sectional variation was observed. In other words, in practice differences have not been set large enough to materialize into large marginal effects. It is worth to stress the (sometimes hidden) costs following changes in maintenance, inspection and repair. Heating system related energy efficiency measures often cause higher running costs and need additional energy- elements to be considered when assessing the profitability of an energy efficiency investment.

In the bottom of table 1, the national VAT rate and the term of the subsidized loans are mentioned. Both can increase the ROE of refurbishments, but due to the small variations observed in the available data, this impact is expected to be modest at best.

In table 2 below, an overview of the observed variation in some policy sensitive tool variables in three countries is given as an illustration. As one can see the variation is vast, even across the four top variables that matter most. The interest rate on subsidized loans is lowest in Germany. Dutch policymakers could enhance the refurbishment profitability by matching their current high rates to the ones in Germany. The German policymakers also stimulate refurbishment by means of a repayment bonus, which is absent in the other sampled markets. The increases in rent after refurbishments are not just an outcome of local policies as market demand and the supply will determine the new equilibrium rent. On the other hand, if legislators don’t limit rent increases by regulations, these increases can be maximized to absorb refurbishment costs fully. This is the case in Netherlands, where the non-regulated rent market does not inflict any limits on rent levels or rent increases. Finally, regarding the eligible grants, the variation is significant as well. While the Danish government does not grant any funds for

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energetic refurbishment investments, Germany offers several subsidies that can even be combined within one project. More details will be given in the next section of this report.

Table 2: Typical variable values across three of the sampled markets

Selected tool input variable (policy sensitive)	Denmark	Germany	Netherlands
Interest rate of subsidized loans	2.0%	0.75%	2.8%
Repayment bonus	no	7.5%-27.5%	No
Resulting rent increase after retrofit	n/a	0-50%	0-25%
Expected amount of eligible grants	0	10.000 €	2.500 €
Expected volume of subsidized loans	0	Up to €100.000	Up to €15.000
Marginal tax rate	50	35%-47.5%	51%
Expected growth rate for net rent	n/a	3.0%	2.0%
Depreciation rate	0	2-100%	3%
National VAT rate	25%	19%	21%
Term of the subsidized loans	n/a	10 years	30 years

Regarding the category of moderate impact variables, the observed dispersion is milder. Marginal tax rates are more alike across markets, and expected net rent growth rates hover around 2-3%. The main difference is found in the available subsidized loan volumes, which are large in Germany and absent in Denmark. This is even more so the case or the variables with lowest impact. The national VAT rates vary between 19-25%, and loans terms between 10 and 30 years. But in the larger scheme of things, these differences matter less, as loans terms will have only marginal impact on the return on investments.

The profitability of refurbishment investments in residential energy efficiency are not the sole outcome of policies and grants. The RentalCal tool has demonstrated that a wide plethora of variables needs to be considered when doing the math. In table 2, a list of policy-sensitive variables was given and discussed. But it is also important to realize that additional policy measures that are not part of the tool can also impact

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the path towards energy efficiency. One example is the setting of strict energy standard for new development and refurbishments. In some markets, like Denmark, authorities impose very strict standards and thereby effectively stimulate the investments in energy efficiency gains. In other markets, like the Netherlands, such standards are absent when refurbishments are considered. A combination of the two approaches is offered by the device of "Individual refurbishment road maps"[2]: i.e. long term energy efficiency targets are individually established and a set of measures for reaching the goals are presented to the investor. The energy efficiency road maps serve the demand of predictability and stability of investors.

Another factor that matters, which is less a function of direct government policy design, is the ratio between construction and energy costs. In case the ratio is low, energetic refurbishments are more likely to occur. In some markets, policymakers can use taxes and subsidies to tilt this ratio – either by reducing construction costs by for instance lowering VAT, or by increasing energy costs by imposing additional taxes - towards the benefit of energy efficiency.

[2] R. Henger et al Energiewende im Gebäudebestand, Handlungsempfehlungen für mehr Investitionen in den Klimaschutz IW Analysen 19, 2017.

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3 Additional requirements for a proper calculation data base

As set out above a lot of variables has been considered and integrated in the tool. While designing the tool observation of deficits were made. For a future improvement of any calculation and the decision base, the following observation should be considered.

a) *Improvement of the calculation base for expected energy savings:* Calculation approaches developed for the formulation and review of energy performance requirements are often used to forecast expected energy savings. They contain various assumptions and specifications. Due to the large difference between forecast and actual savings (see e.g. Results from CONCERTO PREMIUM[3]), investors lose confidence in such information. This is a decisive obstacle. Therefor calculation approaches are needed that offer realistic estimation of savings, taking into account the specific climate, the current occupancy and the specific user behaviour.

b) *Improvement of the data base regarding the service life of technical building elements:* In addition to the investment costs, the profitability analysis also takes into account the financial expenditure for replacement investments in building services equipment (TGA or HVAC). There is an urgent need for data on the service life of building services systems and their components. In the EU, technical service life data will be included in the EPD (environmental product declaration) in the future[4]. The described requirements can also be applied accordingly to components improving the thermal insulation - e.g. insulation layers, thermal insulation systems, windows.

c) *Improvement of the data base for running costs of technical building elements:* Running costs of technical building systems are part of the profitability calculation. Among others, these are costs for inspection and maintenance (incl. cleaning), costs for repair, costs for auxiliary energy and operating materials, costs for insurance (e.g. for photovoltaic systems). For profitability calculations there is an urgent need for data to include influences on running costs[5].

d) *Improvement of the awareness of synergy effects:* Thermal roof insulation will have a positive effect on the thermal comfort in summer. Cooling can be avoided or the cooling load/ cooling energy can be reduced. Such synergy effects should be taken into account, especially in southern countries. They also may improve the profitability.

e) *Improvement of the empirical evidence on the additional benefits for landlords and tenants:* The RentalCal consortium has made intensive efforts to investigate the effects of energy saving measures with regard to non-monetary effects for the time being. In order to convince investors and tenants of such additional benefits, further empirical evidence is required for:
(1) Do landlords benefit from the extension of the service life of external walls as this contributes to the image and any sustainability report?
(2) Do tenants appreciate a higher thermal comfort of indoor air quality in the heating and cooling period?

[3] http://www.buildup.eu/en/news/concerto-premium-technical-monitoring-database-eu-wide-database-makes-results-concerto-projects
[4] In Germany, this is the subject of the further development of the VDI 2067 standard in cooperation with KIT
[5] The VDI 2067 standard provides assistance in identifying relevant cost groups.

f) *Consideration and extension of actor-specific performance indicators:* The performance indicators and key figures typically used by different actors groups (housing companies, non-professional private landlords, energy -consultants) need more specific consideration. Less significant and demotivating data (e.g. static amortisation time) should be replaced by more complex performance indicators (e.g. economic advantage including value enhancement).

g) *Complementing economic and ecological considerations:* Many practitioners are sceptical about the ratio between the amount of energy required to implement energy saving measures and the energy savings actually achieved. The energy expenditure for the production of insulating materials and photovoltaic systems is overestimated[6].

*h) Improvement of the environmental relief quantification data base: C*onserving resources (here energy carriers) by means of energy saving measures and climate protection by reducing greenhouse gas emissions meanwhile are treated jointly. In contrast to primary energy factors, which are generally public and freely accessible, there are gaps in the provision of emission factors.

4 Policy implications gathered from the national levels

The starting point for policy implications has been the partners' each national perspective. The whole project endeavored to collect and compare national approaches for improving energy efficiency investment. The web tool mirrors eight European countries energy efficiency profitability calculations. The cross country perspective is based on those findings and is taken to compare and to establish a common denominator of European policy implications.

Following those most relevant national policy implications are listed and assessed on its relative impact for national and European policies addressing energy efficiency and profitability of investments.

For illustrating the national situation see the Appendix C.

4.1 High impact of subsidized loans and grants for improving the energy performance

Taken the assumption that investment costs don't pay back in a proper period of time (or they proof not to be profitable if alternative KPIs are applied) subsidies and grants are an important instrument for increasing the affordability of energy efficiency investment policies in the rental housing sector. All countries offer grants and subsidies in various numbers and with different conditions such as payback pauses or combination of grant and loans with rates. Especially for those investors with low incomes and in times of low interest rates, loans are less attractive than direct grants as set out below.

The viability of alternative subsidy approaches should also be taken into account. For example, it should be examined whether and how the abatement of greenhouse gases could be

[6] Using a calculation tool developed at KIT and made available via the project page, it can be shown that the energetic payback period for subsequent thermal insulations is only in the range of months (in Germany). Looking at the greenhouse gas emission similar dimensions can be shown.

remunerated by some reward per ton to create a financial incentive. The amount of the remuneration could follow the external cost per ton of greenhouse gases as suggested by the German Umweltbundesamt (UBA 2012). This approach is utility-oriented and distributes the benefits among society and investor, independently from the investor's income situation.

4.2 High impact of tax deductions and depreciation

Taxation categories and rules vary widely within the countries. The impact on tax deductions depends on the effects of reducing the energy efficiency costs. The common basis for taxation is the personal rental income (with other earned income sources, incl. capital gains) with a general personal income tax scale (PIT) progressive with 2-5 levels, with some exceptions in The Netherlands, France and Great Britain. All countries show a flat corporate income tax on companies' profits. Property and transaction taxation can be found in all countries with variation of the taxation basis (property value, local add on). The exception is Denmark with no PIT and Spain.

Tax deductions are quite common for maintenance expenses. Individual depreciation rules for building components are uncommon in the national taxation schemes in practice. Precise definitions concerning distinction between those expenditures lack.

For small income investors it is of particular importance to receive tax deductions based on the tax liability (i.e. the tax amount to be paid) instead of receiving a deduction based on the income.

Municipalities may charge the increase of the urban land value increases while the land is sold. The investment improving the property is recognised as increasing balance-sheet value of the property. Intending a higher rate of energy efficiency "punishing" such investment is counterproductive. Instead for the benefit of the environment and the investor that kind of investment should be honoured by reduced local charges.

Depreciation rules and their relation to balance-sheet value of real estate are relatively unified and have a high impact on the profitability. However, there is still poor harmonisation of tax related rules. In addition, depreciation rules need higher flexibility and cut of deduction periods: The different components of a set of energy efficiency measures (life cycle approach) need specific depreciation rules.

4.3 Medium to high impact of combined regulation and funding

While investments into new buildings can be enhanced by regulative measures supplemented by financial promotion, this effect turns out to be less powerful when related to the existing building stock. Paired with economic steering mechanisms, as described above, regulations are quality drivers accepted by the market[7].

Looking through the investor's eyes the implementation of energy efficiency standards must be economically sound and not just a climate goal driven challenge.

However, for the sake of CO2 reduction political decision makers have to consider if investments must not get public funding beyond the profitability established with the RentalCal tool:

[7] IWU: Immobilien-und Wohnungswirtschaftliche Strategien zum Klimawandel, 2012.

Are public authorities prepared to invest into energy efficiency in those cases where there is no proper return of RoE? Must public authorities (European, national and sub-national) be prepared to fund non profitable investments in order to contribute to the climate goals while private investors can only be asked for investments which are economically sound? From the authorities' point of view, the RentalCal tool might be helpful in dimensioning subsidy programmes to help such investments beyond their profitability threshold. Combining the regulatory framework with funding and a transparent information scheme appears to be the most promising approach for a climate protection strategy which has to meet the challenge of increasing the refurbishment rates against the background of a large variety of individual situations of existing buildings. In principle, positive (e.g. subsidies and grants) and negative (e.g. a fee on energy consumption on top of the energy prices or CO_2 taxes) financial incentives can be applied. Some of those mechanisms are already implemented but not strong enough.

4.4 Medium impact of "soft" measures

In addition to the "hard" measures of regulatory law paired with economic incentives, which will probably be necessary for attaining the targets, also "soft" measures of information, qualification and market transparency have to be considered (e.g. better education of craftsmen, improved planning and quality control[8], education and employment of energy consultants). Besides financially driven incentive structures there are consumer driven incentive structures: Still rather limited research observes that information on consumption (easy to read and easy to understand) contributes to energy awareness that smart feedback devices support young and internet affine consumers and that high costs for energy (heat and hot water looked into) contribute to a careful consumption (unless consumers are rich enough not to care for costs). Following these principles different activities can be observed: Public funded road maps for energetic modernization of individual buildings, obligation to deliver an energy performance certificate, awareness raising campaigns, supplying rental flats with high efficient household devices. The partners' countries stress different approaches which are described in Appendix C.

4.5 Limited impact of rent increase mechanisms

Although the legal framework of all countries offers the refinancing of modernization costs by means of rent increases this is not always a strong incentive for investment. The reasons behind are not just legal ones but factual reasons as the market situation might not allow the full rent increase. For example, in competitive markets, effective rent increases usually are below the legal possibilities. Other reasons such as social corporate responsibility demands for public/ municipal owned housing companies might limit potential rent increases to secure affordable rents for the tenants. However, this creates a significant split incentive barrier, is lowering green value margins and prolonging pay back periods for deep retrofits which often are not refundable by moderate rent increases. An additional hardship stems from the modernization packages: energy efficiency measures don't stand alone but come together with other improvements that impact rent increases.

[8] IWU: Zielerreichungsszenario 2013.

4.6 Low impact of running costs for energy because of split incentive phenomena

There is no financial need to invest into energy efficiency for an investor as long as the tenant is charged with costs of heating, maintenance and inspection costs. In all countries energy costs (heating, hot water, electricity, and related maintenance and inspection costs (often called running costs or 2nd rent)) can become a contractual obligation of the tenants. As long as this is the case and the landlord is not obliged to invest into energy efficiency, for example by technical standards in case of modernization activities, there is no financial reason for energy efficiency investments. The impact of running costs for energy expenses is low as long as the investing landlord doesn't have to pay them.

5 Conclusions and suggestions addressing the European level

This policy analysis, based on the RentalCal's framework conditions, reveals a latent hierarchy in the impact of various policy sensitive variables. Policy makers have a wide plethora of rules and regulations at their disposal, but not all measures and means are equally effective when considering the return on residential energetic efficiency investments. When looking at the return on required equity (ROE) the interest rate of subsidized loans, repayment bonuses, the amount of eligible grants, and rent increases that result from retrofits matters most. Governments can influence these input variables by offering lower interest rates or by loosening rent regulations to allow for larger rent increases after energetic retrofits. The calculations and simulations in our RentalCal tool show that lowering VAT rates or stretching the terms of subsidized loans have only weak effects on retrofit ROE.

When comparing across markets, we find that the German rules and regulations are set most favorable, especially regarding the variables that have the strongest ROE impact. In Germany investments in residential energetic retrofits meet the lowest interest rates for subsidized loans, enjoy the largest repayment bonuses, and can expect the largest grants.

Obviously, the RentalCal tool cannot absorb all relevant details for each single case. For the future, we recommend to invest in more precise cost data for HVAC-technology (life-cycle costs, maintenance costs and repair costs) to allow for more precise model estimations, also regarding energy savings, in the future. Moreover, the RentalCal tool is currently designed to balance the financial costs and benefits of retrofits. But, obviously there is more than monetary flows alone. Additional benefits regarding CO_2 reductions, stranded asset risk reduction, and personal comfort can be incorporated more explicitly in future policy assessments. Furthermore, we see new changes and opportunities that will affect the impact of energy policy measures. For instance, IFRS lease accounting, which will change perspectives of rent versus own decisions and may well increase the demand for shorter lease terms. Thus accounting changes (regulations) can have moderating effects on retrofits decisions and should be included in future analyses. Taxing CO_2 emissions (however at the energy producers' side instead of taxing consumers) is another example of future policy considerations that ought to be explored within the financial analysis of energetic retrofits, as these taxes may well tilt the balance between costs and benefits towards more positive net present values.

Taxation policy needs to address property values: investments into energy efficiency- although increasing the (green) value of the construction should not be punitive but supportive by taxing the land and not the construction. However, for changing the regulatory regime of property taxation in many countries the local and regional level must be included.

The following cross country findings are presented for political consideration:

- Direct financial support of energy efficiency measures by grants and very low interest loans
- Introduction of a climate component in housing subsidies for low-income households to consider higher rents in energy efficient buildings.
- Reductions based on the tax liability (i.e. the tax amount to be paid)
- Income tax reliefs by depreciation
- Short term and flexible depreciation rules based on components (life cycle of measures)

- Transparent and consistent long lasting funding programmes
- Clearing and streamlining of the “programme jungle”
- Stress on information instruments (energy performance assessment (EPA), energy consultancy, rental table)
- Further extension of “green” premiums within the legal system of rent control (or rent indices like in Germany)[9].
- Energy performance reflected in the building valuation (example German estate appraisement ordinance ImmoWertV)[10].
- Broadening the knowledge base of energy saving potentials, life cycle costs of energy efficiency devices for minimizing risks and maximizing investment appetite
- Information on and acceptance of non-fiscal benefits of energy efficiency investments (lettability, indoor health and comfort)
- Stress on quality and monitoring of consultancy services (EU 2012/27/EU directive)
- Harmonisation of rental and tax law
- No punishment but financial benefits for green investments (tax exemption /reduction for green construction or green sales price)
- Predictable rent increase mechanisms based on energy efficiency measures
- Limitation of rent increase without measurable investments into energy efficiency
- “Cost optimal level” of EPBD recast, the EU directive 2010/31 and the EU energy efficiency directive 2012/ 27 needs to integrate the investor’s perspective as long as there are split incentives

[9] An integration of the energetic quality into the rental index[9] provides housing companies and investors with the security of being able to consider the impact of improvements of the energetic quality on the rent on the basis of a publicly recognised basis. However, there are still no uniform rules as to how exactly this can be done beyond a guideline.

[10] Current research within the Horizon2020 RenoValue project (KIT with partners) explores how these “green” premiums ought to be included in modern property appraisals. In Germany, there is now a legal requirement that value appraisers must also take into account the energetic properties (energy performance) when preparing a valuation report. This ensures that this aspect is taken into account. However, the regulation does not contain any specific indications as to how this should be done.

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Appendix A: Energy efficiency policy studies

1. National building renovation strategies prepared in course of implementation of Energy Efficiency Strategy https://ec.europa.eu/energy/en/topics/energy-efficiency-directive/buildings-under-eed
2. Impact of energy performance certificates on transaction prices in selected countries (Austria, Belgium, France Ireland, UK included) https://ec.europa.eu/energy/sites/ener/files/documents/20130619-energy_performance_certificates_in_buildings.pdf
3. Impact of energy performance certificates on property value and nZEB in selected countries for policy makers (relevant for Austria, Czech Republic, France, Germany, Netherlands, Italy, Norway, Poland, Spain, UK) http://zebra2020.eu/website/wp-content/uploads/2014/08/D3.1-Final-AR_RD_2.pdf and for professionals and users http://zebra2020.eu/publications/the-impact-of-energy-performance-certificates-on-property-values-and-nearly-zero-energy-buildings-2/
4. Strategies for nZEB market transition on national level (relevant for Austria, Czech Republic, France, Germany, Netherlands, Italy, Norway, Poland, Spain, UK) http://zebra2020.eu/publications/strategies-for-nzeb-market-transition-on-national-level/
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Appendix B: List of policy insensitive variables

Selected tool input data (profitability drivers)	Influence on RoE (tool based)	Strenght of influence on RoE	Comment	Relevance for policy makers
Energy-related investment costs (NET)	lower investment cost lead to higher RoE (and vice versa)	strong	distinction of energy-related investment costs and anyway costs not common in all countries	Generally not influenceable
Exit yield for the buyer (terminal cap-rate)	lower cap rate leads to higher exit value and to higher RoE (and vice versa)	strong	resulting effect depending on the market	Generally not influenceable
Expected further development of maintenance, repair and inspection costs	for savings: higher rate leads to higher RoE (and vice versa) for additional costs: lower rate leads to higher RoE (and vice versa)	moderate	only in case of changes in non-reimbursable costs	Generally not influenceable
Savings rate projection (change per year)	higher savings rate in future leads to higher RoE (and vice versa)	moderate	depending on possible VOFI reinvestment	Generally not influenceable
Borrowing rate projection (change per year)	lower borrowing rate in future leads to higher RoE (and vice versa)	moderate	depending on variability of borrowing rate und borrowing rate projection	Generally not influenceable
Change in vacancy rate of the property after refurbishment	reduction of vacancy rate lead to higher RoE (and vice versa)	moderate	energy efficiency refurbishment could reduce vacancy rate especially in poor markets	Generally not influenceable
Calculation period for profitability analysis	longer calculation period leads to higher RoE (and vice versa)	moderate	default value depending on investor type	Generally not influenceable
Individual savings rate (on bank account)	higher savings rate leads to higher RoE (and vice versa)	moderate	depending on difference to individual borrowing rate	Generally not influenceable
Debt portion	higher debt portion leads to higher RoE (and vice versa) if RoE is higher than borrowing rate (leverage effect)	moderate	default value depending on investor type	Generally not influenceable
Individual borrowing rate (for market loan)	lower borrowing rate leads to higher RoE (and vice versa)	moderate	depending on general interest level	Generally not influenceable
Repayment method (loan structure)	different loan types lead to slightly different RoE	weak	depending on variability of borrowing rate und borrowing rate projection	Generally not influenceable

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Appendix C: Evaluating and comparing energy conservation policies and incentive systems in the participating countries

This appendix deals with policies and incentives for heat conservation. This could for instance be questions like: Is it possible to get low interest long term loans? Can the net rent be increased when the energy bill, due to house insulation is reduced? Are the heat tariffs furthering energy conservation? Are there energy codes for new buildings, and for renovation? Are there subsidies for heat conservation activities? Is there an energy consultancy service system? Are there subsidies for energy conservation? And many other specified incentives and policies.

The report is trying to answer the questions whether the RentalCal countries are on the right energy conservation policy and incentive track. Where this is not the case it is shortly discussed and elaborated which policies and incentive changes are needed in order to reach energy conservation goals. Each country section is based on information from the RentalCal participants in the respective country section, and therefore on very concrete knowledge from each country.

Germany

The German energy conservation incentive system

In Germany operation costs like energy costs usually are paid by the tenant. Landlords are obliged to meter (hot) water and energy costs and to charge costs by consumption. Besides elevated construction standards and regulations there are three main incentives for energy conservation in rental buildings:

1. Increasing the rent after energetic modernization

- Given the eminent role of the private rental sector, the reduction of split incentives in the rental housing industry is an important pillar of energy policy in Germany. The regulations dealing with the split of interests between landlords and tenants are those of the German Civil Code, the BGB. Basically, the legal system opens two different approaches: the *cost approach* and the *rent-control-approach.*
- Choosing the *cost approach,* the landlord has the right to implement (amongst others) modernization measures which induce sustainable savings of energy (heat and electricity) or water unilaterally. Legal regulations allow shifting modernization costs to tenants up to an annual maximum of 11 % of the investment costs (net subsidies and maintenance costs). Under the present CDU/SPD Berlin coalition a Civil Code draft regulation is discussed that reduces the 11% threshold down to 8% percent together with an absolute upper ceiling of 3.00 €/m² rent increase. This shall help to concentrate modernization to meaningful energy efficiency measures.
- Choosing the *rent control approach* in case of modernizations the landlord is allowed to increase the contractual rent up to the level that average market participants would pay for the improved comfort or energy cost reductions. In other words, energy efficiency may shift the rent ceiling upwards, thus incorporating “green” premiums in the legal system of rent control in Germany.

2. Subsidies for energetic modernization

A further pillar of energy efficient investment policies in the rental housing sector are subsidies: At present the main public funding schemes stem from the federal government owned bank the Kreditanstalt für Wiederaufbau (KfW). To a lesser extent, grants are available from different federal, state and municipal bodies.

3. Taxation

At present taxation does not play an eminent role in order to facilitate energy saving investments. However tax reductions are quite highly appreciated finally (after various motions to establish tax reduction for EE investment) the present CDU/SPD Berlin coalition agreed upon tax deductions within the coalition contract, i.e. tax reductions rules might be considered. The 2019 budget draft does not reflect this approach yet.

Requirements to capitalize modernization investments exist for all investments that lead to any substantial increase of the building standard. Linear depreciation allowance rates range from 2 % to 2.5 % annually. Any other costs are eligible for immediate write off or write off over a 5 years period. Thus, recovery periods are not bound to the working life of building components within the tax system.

Evaluation of the German energy conservation incentive system

A trend analysis by IWU of the development of thermal protection and heat supply shows that the existing incentive instruments in Germany are not sufficient for attaining the goals of the energy concept till 2020 and 2050 neither in total building stock nor in rental building stock (IWU: Zielerreichungsszenario 2013).

The possibilities to increase rents after energetic modernization are sufficient but in competitive markets, effective rent increases usually are below the 11%-figure. Furthermore some landlords limit the rent increase to secure affordable rents for the tenants.

Subsidies for energetic modernization (mainly those offered by KfW) are often used also by landlords but are not sufficient to double the thermal modernization rate. Furthermore landlords prefer grants more than low interest loans especially regarding to the actual low interest period.

Suggestions for an improved incentive structure

In the new building sector the step-by-step transition to a climate neutral standard in 2020 can be realized by regulative measures (especially the energy saving ordinance) and a supplementary financial promotion.

Concerning the existing building stock there is also the option of regulative legal measures. Here economic steering mechanisms appear to be the most promising approach for a climate protection strategy which has to meet the challenge of increasing the refurbishment rates against the background of a large variety of individual situations of existing buildings. In principle, positive (e.g. subsidies and grants) and negative (e.g. a fee on energy consumption on top of the energy prices) financial incentives can be applied. Some of those mechanisms are already implemented but their impact is not strong enough.

In addition to the “hard” measures of regulatory law and economic incentives, which will probably be necessary for attaining the targets, also “soft” measures of information, qualification and market transparency have to be considered (e.g. better education of craftsmen, improved planning and quality control). (IWU: Zielerreichungsszenario 2013)

Bet case incentives/ideas

Among others the following elements of a good “incentive structure” are discussed in Germany:

- Introduction of full repayment bonus or grants in addition to low interest loans of KfW also for professional landlords of multi-family buildings.
- Introduction of direct refund of taxes up to 10 % of investment costs for energetic modernization.
- Further extension of “green” premiums in the legal system of rent control in Germany. IWU has executed several research projects for the federal ministry of housing, that deal with the question how to empirically measure market premiums for energy efficiency in legal rent surveys.
- Introduction of public funded road maps for the energetic modernization of individual buildings. These voluntary road maps should be established by energy consultants.
- Introduction of a climate component in housing subsidies for low-income households to consider higher rents in energy efficient buildings.

- “Mieterstrom”- tenants electricity: the local production and consumption of high renewable energy (instead of feeding the electricity into the grids) receives a small bonus of 0, 02 €-0, 04 € per kWh. Landlords can opt for this bonus in case they want to establish renewable electricity production. Landlords take a quite strong interest in the Mieterstrom concepts: because this model can help to keep electricity costs stable (although running costs can be passed on to tenants landlords with an interest in affordable rents take care of the “2nd rent”- see I b). Because Mieterstrom offers better margins compared with selling the electricity to the overall grit as payment for feeding the grits decreases. Because renewables count for the primary energy factor.

Besides financially driven incentive structures there are consumer driven incentive structures: Still rather limited research observes that information on consumption (easy to read and easy to understand) contributes to energy awareness that smart feedback devices support young and internet affine consumers and that high costs for energy (heat and hot water looked into) contribute to a careful consumption (unless consumers are rich enough not to care for costs). Following these principles different official activities are under way:

- Consumer protection organization offer low key approaches for special target groups (social aid, refugees, etc.) to raise awareness and to support reduced consumption
- Energy efficiency information campaign of the DENA (German Energy Agency) 2002-2004
- Obligation to deliver an energy performance certificate (since 2009) reporting the energetic status of a flat / house (however not properly respected)
- Landlords supplying rental flats with high efficient household devices (Thesenpapier Nutzerverhalten im Mietwohnungsbereich, Ulrike Hacke 2009; eSESH- Saving energy in social housing with ICT 2013 www.esesh.eu)

Poland

The Polish energy conservation incentive system

The building codes existing in Poland are applied in the case of construction of new buildings and partly in the case of modernization of the building. The owner of the residential building, who is doing insulation of walls, replacement of windows and doors must follow the requested U-values of those components only and not the targeted EP of all the building.

There are three voluntary incentive schemes for energy conservation available for owners of residential buildings, independent on the ownership form of them:

I. *The commercial loan subsidized by:*

1. 16% from the State Fund for Thermo-modernization and Renovation of Buildings when the savings in final energy calculated in the standardized energy audit exceed 25%
2. 15% from the State Fund for Thermo-modernization and Renovation of Buildings, available for buildings constructed before 1st August 1961 when the savings in final energy calculated in the standardized energy audit exceed 10%

II. *The white certificate scheme*

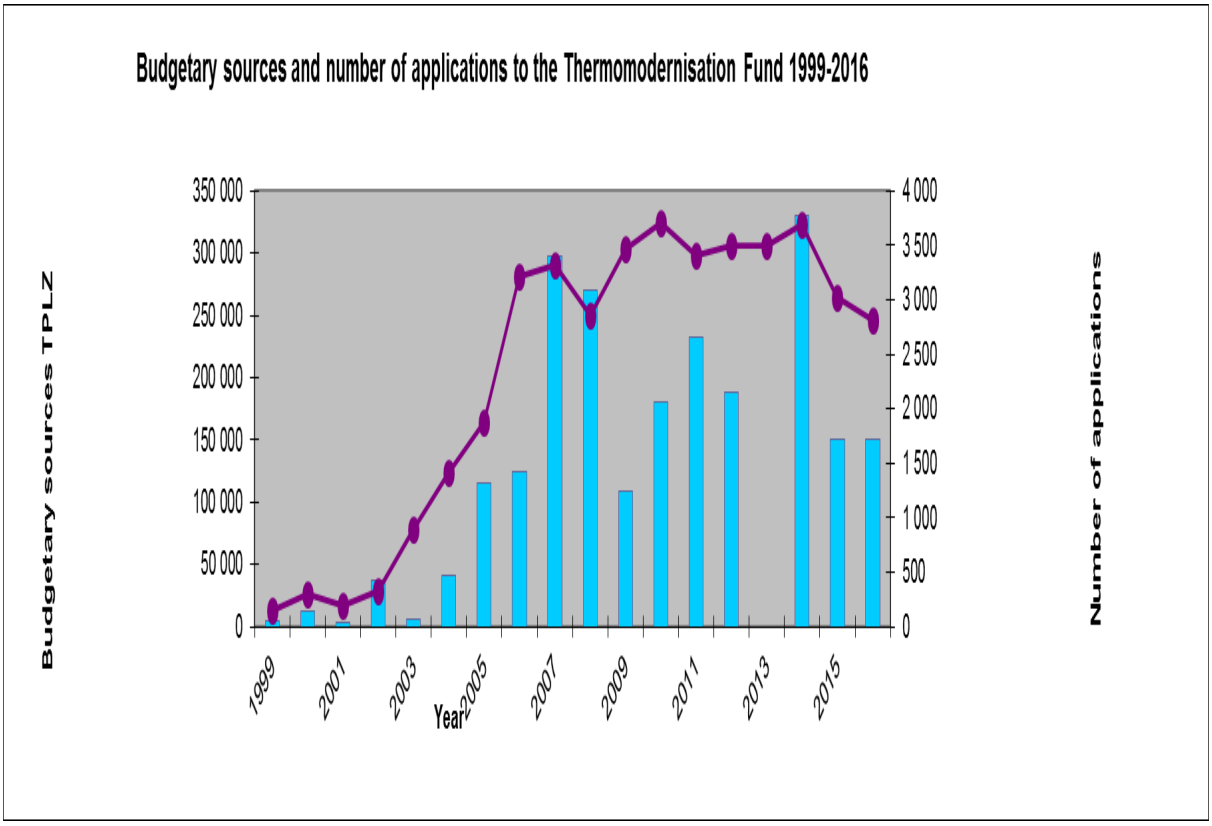
Owners of buildings or apartments may apply for tradeable certificate of 1 Mg_{oe} savings when the energy savings measures result override 10 Mg_{oe} per application. The value of one certificate is nominally approximately 350€, but the market regulates the price (rather lower).

III. *The rent increase*

According to the Polish Law on Tenant`s Rights from 2001 art.8a, chapter 4b the landlord can increase the rent by **10% of investment cost which** causes growth of usable value as result of long-lasting improvement of the premises.

The first scheme mentioned above is responding quite well to the needs of owners of typical multi-family buildings, where the share of rented dwellings is relatively low. Within this structure, so far since 1998 approximately 35 000 residential buildings (34 000 multi-family and 1000 single-family) were subject of deep renovation with minimum 25% reduction of final energy demand, but in average around 40%.

The following graph and table present efficiency of this scheme:



The second scheme is used rather by home owners associations managed by professional facility managers and housing co-operatives, as the minimum 10Mg_{oe} of savings is not achievable in the case of one buildings being subject of deep renovation.

The third scheme is not used in the practice, as the tenants don`t agree with so high increase of rents and resign on renting the property or go to the court, which decides rather in favor of tenants.

Evaluation of the Polish energy conservation incentive system

The private multifamily buildings which are typical rental buildings in Poland, are located mostly in city areas being subject of historical monument preservation, so in these houses the reduction of energy consumption after deep modernization doesn`t reach the minimum required level of 25%, when applying for the subsidy accompanied by the commercial loan.

Owners of single-family buildings are not using this scheme very frequently as their terms are not very favorable. The subsidy is subject of the personal income tax and its nominal level in comparison with the investment cost, cost of energy audit, tax and bank charges is not very high.

There no incentive scheme for owners of rented dwellings.

The reduced VAT tax (from 23% to 8%) is eligible for all types of residential properties in case of their renovation.

Suggestions for an improved incentive structure

NAPE suggested 2017 to the government improvement within the 1st scheme, which will consider higher cost and lower energy conservation results when the owners of buildings

being subject of historical monument preservation undertake deep renovation of their buildings. It could slightly increase their interest in performing more than usual renovation.

Best case incentives/ideas

- The 1st scheme, out of subsidy, *provides assistance of advisors – energy auditors,* who are helping investors – owners of buildings in selection of individual energy conservation measures and in sizing theme in technical and economic terms. Then, the energy auditors prepare the standardized energy audit, which is bankable document mandatory required while application procedure for subsidized loan. The loans are offered to 100% investment cost and up to 20 years.
- For owners of dwellings there was in Poland long time in force the scheme of reduction of personal income tax to some extend by the cost of renovation of dwellings. This scheme was very frequently used for replacement of windows and individual heat sources in dwellings. *As this was the support instrument to rather pure renovation measures, the energy conservation impact was not registered, but it appeared obviously.*

Czech Republic

The Czech energy conservation incentive system

The incentive structures for energy conservation in rental buildings in the Czech Republic are the same as for other types of housing. There are currently several supporting programs available for energy efficiency measures in the existing housing stock:

- New Green Scheme (Nová Zelená úsporám) for family houses and multifamily houses. Direct subsidies for thermal improvement of building envelope, efficient HVAC technologies and use of RES like heat pumps and PV cells, the subsidy amount depending on the type of measure. In some regions the access to subsidy is limited due to overlapping with other subsidy programmes (Operation programme environment)
- IROP funding scheme. European incentive for development of regions outside the capital city.
- Panel 2013+ long term low interest loans for multifamily houses. Incentives for improvements of building envelope and HVAC systems applying to both repairs and renovations
- For all types of support specific energy efficiency requirements must be fulfilled (standards and legislation).
- Tax relief only for mortgages.
- For buildings connected to district heating (DH) network usually a new contract is negotiated between the owner and the DH provider after the building renovation.

Evaluation of the Czech energy conservation incentive system

The incentives are sufficient to exploit a big part of the cost-effective energy saving potential.

However despite the actions already undertaken, large cost-efficient energy saving potential still remains unexploited.

It has been observed in the past that some of the energy efficiency measures were not as efficient as originally expected. This is due to multiple reasons (inappropriate technical solutions, poor workmanship, neglected maintenance, durability issues and fading long-term properties and performance of used products, user´s behavior, e.g. rebound effect).

It can be generally estimated that a standard renovation of buildings originating from the period before 1978 would lead to about 40-45% of energy saving, if properly done. The later buildings with lower cost effective energy saving potential usually save up to 30-35% of energy.

The energy conservation incentive structures are functioning but the functioning could be better, the explanation, see above.

Some investors are lacking motivation due to unclear perspectives about the evolution of energy prices on the market as well as the monetary and fiscal policy outlooks in the country.

Suggestions for an improved incentive structure

The following improvements should be considered:

- Monitoring the energy consumption of the buildings after the energy efficiency measures are taken and adoption of corrective measures if the target is not met
- Moving from the current mindset to a longer-term stable investment environment
- Increasing the support for use of RES and removing barriers to decentralized energy production.

Further, based on the recommendations of the Report on the achievement of national energy efficiency targets, measures shall be adopted to improve the use of existing instruments for increasing energy efficiency in buildings and, at the same time, existing barriers to the fulfilment of the energy savings predictions to the policy measures adopted according to the National Energy Efficiency Action Plan (NEEAP) need to be eliminated. The following measures and instruments are involved in particular:

- making the disbursement of grant program funds more effective by reducing the administrative burden on applicants and eliminating other barriers to disbursement,
- improving public awareness of the benefits of energy-saving measures
- enlarging opportunities for funding projects promoting energy savings from grant programs

Best case incentives/ideas

Good past experiences are in the field of free energy consultancy program EFEKT. The priority of the program is the education and training of both non-professional and professional audience, assistance to statutory cities and regions in implementing the energy management and support for small investment projects with direct energy savings especially for cities and villages, but also for small business projects.

Although the EFEKT program has only a small budget it plays a vital role in the field of non-financial energy efficiency support. It is however difficult to quantify the financial and energy efficiency impacts of this supporting measure.

Spain

Spanish energy conservation incentive system

There are no specific incentive structures for energy conservation in rental buildings. The incentives are for all buildings depending on their general use (housing, industrial…, see https://www.idae.es/ayudas-y-financiacion). Two specific projects are devoted to a building refurbishing including energy efficiency (PAREER program), for de-carbonization process and energy renovation in public buildings (FEDER-POCS 2014-2020). There are no specific incentives for rental housing or private landlords.

- The Spanish Building Code establishes the minimum requirements in terms of construction isolation, energy consumption for hot water, renovation and refurbishment related to isolation and heating systems. For hot water, the common system applied (compulsory) are the solar energy produced in specific installations in housing blocks, or the integrated heating-hot water system with low-consumption systems like condensation boilers. For the heating system, other than the high efficient systems (heat pumps or condensation boilers) are forbidden to be newly installed. The renovation of the existing ones plays a key role to improve the energy efficiency. Any rule which incentive the renovation is required.
- There are no subsidies for energy conservation / renovation systems for private buildings and housing other than the fiscal ones and only few fiscal incentives are applied across Spain. This is probably changing shortly with the new government who has advice a change in the energy efficiency policy.
- In some Spanish Regions (not in all), a part of investment in energy efficiency improvement leads to tax benefits as investors are allowed to reduce 10% of the capital used (or all costs incurred on) from the direct tax payment.
- A reduction of the property tax was announced by the Ministry of Economy in 2017 depending on the energy rating in each house. The reduction is not yet in place but it is expected to come during the following years due to the apparent change in the Spanish regulation.
- The grant system was abolished in 2015 due to budgetary shortages and is not reestablished yet. The grants should be covered by the regional government budgets (and not the national one) which are also strongly constrained.
- At the end of 2017, a new program started with incentives for energy building renovation however applicable only to public buildings, for projects with deep rehabilitation and for owners of association (that is, for those buildings under ‘horizontal ownership’ regime to be energy efficient renovated but only applied to the common space co-owned (roofs, basic common services, façades.). It is not applicable for private landlords.

There is a lack on incentive structures in the energy **conservation** policy in Spain in order to allow for larger renovation and energy efficiency transformation in the housing stock. There is no special regulation for rental units other than those when the building is being built for rental purposes.

There is no incentive structure as such for the rental market. However, the market incentive estimated in the database for Mediterranean areas (built under RentalCal project) mirrors a green premium around 3% on prices. This means that a market incentive for retrofitting and

reduction on energy consumption exists in the market, from the landlord perspective and in spite of the climatic area which has lower heating requirements. Differences on incentive between the colder areas and the hotter areas could reach 30%. The own findings show a market prices energy efficiency by a 3% in Mediterranean areas (although there is still limited evidence).

As the rental market is still small (but equivalent to that in other countries in some main regions and capitals) and very disperse in terms of landlordship in Spain, the incentives for the user to reduce the consumption should be general at this stage rather than only for rental sector. Having said this and considering the rental sector's fast growing an opportunity to apply measures of energy efficiency associated to the rental market enlargement is suggested.

The economy could maintain the pattern of increasing energy consumption at the same time that reduction of the CO2 emissions if energy generation comes from green sources. In Spain over the last 15 years a strong energy transformation in energy generation had happened: with around 17% of total primary energy now coming from wind and renewables sources. This has contributed to a falling profile of the CO2 emissions in Spain. The new government has announced a new energy policy stressing the introduction of solar energy capture systems and de-regulating the role of prosumers. The new policy potentially will allow most landlords to implement solar systems to capture energy during the next years. This could strengthen the role of green energy in Spain.

However, the hypothesis is that if the market-green premium is correctly perceived by landlords and tenants, then both groups could start a retrofitting process using different strategies. (1) No initiative for new houses (already isolated), (2) soft retrofitting (RentalCal definition) for those units with less than 15 years, (3) retrofitting/soft renovation for houses between 16-30 years old (depending on their registered state and quality), and (4) deep retrofitting (RentalCal definition) for those dwelling with more than 40 years. Based on the hypothesis that every year an average of a total of 5% of the stock is retrofitted (an average linear intervention on the stock is assumed but, as the experience says, the process will be procyclical, that is, increase the speed of renovation in the economic growth periods and reduce during crisis) it is expected that depending the age and quality, 5% of buildings in every category may be retrofitted. With that retrofitting, the houses of category 1 would show a decrease of 20% of energy consumption, category 2 of 35% and for category 3 a reduction of 45%.

Evaluation of the Spanish energy conservation incentive system

In the case of Spain, the grant incentives when applied in the past didn't have a strong effect because there was small budget to cover the different retrofitting needs and possibilities. The energy efficiency incentive goals declared by the public institutions are not sufficiently clearly defined so it is difficult to obtain any incentive or grant to proceed with an energy efficiency retrofit. However, the perspective is positive due to the change on the Spanish policy perspectives for next years.

From the technical view, the incentives are a bundle of rules compulsory for new constructions or renovation works, so they are the only one effectively working. For renovation, some regions allow to deduct the total costs of energy retrofitting from the personal tax. It should be identified as interventions for energy consumption reduction.

It is expected that the government approves a set of new rules to implement these goals in 2018, at least eliminating some barriers (like the 'tax to the sun') and allowing private initiative to install green system of energy generation like the solar one. None of the plans are implemented so far.

Suggestions for an improved incentive structure

The following improvements are suggested:

- Elimination of the fixed tariffs which reduce the savings for less energy consumption
- Identify clearly the type of improvements to be granted
- Increase the amount of grants to be sufficient to become an incentive.
- Tax measures, like tax relief on real estate taxes
- Co-finance at lower interest rates, especially in those cases with complete refurbishment.
- Administrative requirements simplification
- Stress solar energy production systems. Implementation measures and network contracts would be analyzed and addressed as the potential to obtain clean energy from the sun is large in Spain.
- Subsidized credits with substantially reduced interest rates for private landlords as the current policy only is applied to large corporations or public institutions.
- At the moment, the energy consultancy report is not required as compulsory in Spain (only the Energy certificates are compulsory), so the energy consultancy fee as compulsary costs does not exists in our market. Saying that, as it is a cost for investment implementation, any deduction will include the energy consultancy report costs in those to be deducted.
- Develop databases with energy information associated to market uses. Contracts, transactions and their economic and physical (housing and building) characteristics should be collected in order to facilitate the analysis of energy efficiency.

Best case incentives/ideas

- Based on a recovery in the economic situation, the best incentive should start from Government rules (actually, the Housing Policy Plan for 2018-2021 contains incentive for energy efficiency renovation in rental buildings but most applied in strong interventions or new building for rent) but always when it dedicates resources enough to fulfil the goals. The collaboration with the private sector multiplies the effects of public investment.
- Improve the legal complains' system in cases of rent unpaid. Currently, it takes at least one year to launch the tenant affecting rental sector returns and expectations. It would be good to separate the social rent sector from the private rent sector (not clearly differenced in the Spanish market) and let the social services to take part in the former allowing the private investment to intervene in the latter. These could increase transparency in the private rental market and make it become more attractive for investors. Legal differences and measures for both will add that transparency.
- A finance pattern including reduced interest rates and long term maturity would be needed to stress the decision taken process to energy renovate rental housing buildings.

- A public plan for energy renovation of the public housing stock. The public housing stock of social housing is around 4% of the total stock of principal homes in Spain and those houses are in rent.

United Kingdom

UK energy conservation incentive system

Heat Incentive (RHI): Payment is received for producing heat from a renewable and use it to warm your home. The homeowner is paid a tariff rate for each unit of energy generated. Domestic payments are spread over seven years. Non-domestic payments are spread over 20 years. https://www.ofgem.gov.uk/consumers/household-gas-and-electricity-guide/extra-help-energy-services/energy-saving-support-schemes-and-advice of the adjustments to the dwelling with regards to the lease agreement needs to be agreed by both the landlord and the tenant – all decisions post energy improvement is subjected to the tenancy agreement in the UK.

Evaluation of the UK energy conservation incentive system

There is not enough incentive for energy conservation overall in the UK (for rental dwellings). The regulation discussed in question 1.1 only takes formal effect in April 2018 – a more clear answer to this question will present itself in the months after the regulation has taken effect. Currently, stepping up energy efficiency levels in the domestic sector is hindered by a number of uncertainties. For owners and investors, uncertainty persists over key parameters such as the payback period and market-supported rent increases. Technological progress and falling prices for the current range of energy efficient technologies and materials introduce further uncertainty into the timing of the investment decision. For tenants, energy efficiency ratings and even energy bills from previous tenants may only have limited predictive value for their own energy consumption.

The existing incentive structures for rental dwellings in place in the UK are relatively thin compared to other countries. There is definitely scope for improvement in this area in the UK

Suggestions for an improved incentive structure

The UK requires a more formal financial incentive towards energy conservation in rental buildings, which people can trust. This is currently a difficult topic , given the failure of the Green Deal in the UK - again, the effect of the regulation to be imposed in April 2018 will also play an important role of what the next step in this regard will be.

Best case incentives/ideas

Low interest long term loans for energy efficiency investments combined with free energy consultancy in this regard will be a good start for the UK.

For PRS properties, this is complicated by the split incentive problem, i.e. landlords do not benefit directly from the savings arising from these investments. Instead, the benefits are enjoyed by the tenants of these upgraded properties via lower energy bills and/or enhanced thermal comfort. Hence, the only way to recoup the investments is typically for landlords to obtain higher rents.

Denmark

The Danish energy conservation incentive system

There are rather strong building codes for new buildings and for renovation of old buildings. However the following can be observed:

- A very weak subsidy linked to trading in energy conservation. This incentive equals around 2-4% of the capital investment in heat conservation.
- A rather high fixed share in the tariffs in district heating systems. This means between 30% and 60% of the heat bill for a 75 m2 flat with an annual heat consumption of 10.000 kWh.
- No policy to deal with the split incentive problem in rental buildings.
- Relatively low heat prices in the cities, due to rather efficient district heating systems.
- High heat prices outside district heating areas, due to high taxes on oil and gas for heating.
- No specific incentive for generation of low temperature district heating systems.
- High taxes on electricity for heat (for instance wind power), hampering the in a smart energy supply system needed integration of heat and electricity.
- No incentive furthering the synchronization of investments in energy supply systems in heat conservation.
- Zero tax on biomass for heat, furthering biomass based heating at the costs of more smart system relevant wind power/heat pump based low temperature heat in district heating systems.

Evaluation of the Danish energy conservation incentive system

- The building renovation code can be circumvented by calling house improvements for repair. In that way the building codes only seems to work efficiently in cases where it also pays to invest in energy efficient renovation.
- Too high fixed tariff share in district heating systems hampers heat conservation implementation.
- Not sufficient possibilities for getting long term low interest loans,
- Trading in energy conservation “certificates” is very inefficient and subdued to fraud and bureaucracy.
- Incentives for an integration of investments in energy supply systems and energy conservation are not in place. High tax on electricity for heat hampers integration of heat and electricity.
- Synchronization with heat conservation and the need for low temperature district heating system does not sufficiently function.

In general the incentive system is not strong enough to ensure an energy conservation goal of 40% before 2050.

Suggestions for an improved incentive structure

The benefits from heat conservation are not only within the heat sector. For instance reduction of kWh/m2 makes low temperature heat possible without extra investments in piping and house installations, which again increases the COP factor of heat pumps. This also increas-

es the value of wind power for heat in the competition with fossil fuel and biomass resources, which again increases the value of wind power in general. In that way house insulation and low temperature district heating can be an important part of the integration of increased shares of wind power in a system of low temperature district heating, heat pumps and heat storage. Low temperature district heating also improves the economic efficiency of using industrial waste heat and geothermal heat, and reduces the heat loss in the district heating system. As a consequence it is a must, if heat and fluctuating inw power should be integrated to make this possible by:

- Zero electricity tax on wind power for heat. Same tax as for biomass in combination. In order to support the integration of wind power and the heat market.
- A tariff policy in district heating areas where it is recognized that the benefits from energy conservation comes from an **energy system, and not only from the heat sector.**
- The first step in this tariff policy could be a change to a main principle of always 100% variable tariffs in district heating areas.
- -Introduction of public guaranty for 30/40 years 2% fixed interest loans,
- -50% subsidy to energy consultancy services.
- 10% investment subsidy to heat conservation certified by an energy consultant.
- 50% energy conservation subsidy to low income pensioners.

Best case incentives/ideas

- Good past experiences with a combination of energy consultancy and subsidies for energy conservation,
- Good experiences with funds for energy renovation, specifically high subsidies (50%) for low income and old people, etc.
- Good experiences with replacing heath consumption subsidies with “investment in heat conservation” subsidies.

The Netherlands

The Dutch energy conservation incentive system

In the Netherlands a wide range of rules and regulations have been put in place to stimulate energy efficiency within the housing market. Starting with the introduction of the energy efficiency labels in January 2008, Dutch landlords and tenants have been made aware of the energy efficiency status and potential gains of their dwellings.

Evaluation of the Dutch energy conservation incentive system

Improving the energy efficiency of rental homes has been a function of the atypical supply side of the Dutch rental housing market. As almost 80% of all Dutch rental homes are owned by social housing associations, most of the government policy has been targeted at social housing. Through various set of incentives (Energiesprong, EPV) social housing companies have been stimulated to refurbish their housing portfolio and enhance the energy efficiency levels, especially of the oldest homes in their portfolio. Thus far, the vast majority of Dutch energetic retrofits has therefore been initiated and undertaken by social housing associations. For private landlords, the Dutch government has developed fewer schemes that have proven effective. Given that the Dutch market for rental homes has been tight (demand exceeded supply) private landlords have had little need to compete on energy standards.

Today, the Netherlands faces a next challenge – the transition away from gas heating. In this challenge, also the energy efficiency levels of private rental homes are targeted. Various new incentives are currently being designed, ranging from green financing benefits to varying local housing taxes that increase with the energy index (the invesre measure of energy efficiency).

Suggestions for an improved incentive structure

Regarding the key parameters that are part of the RentalCal Tool, one should focus on financing incentives (subsidized lending, green financing rates and conditions) and enhanced value capturing (rent increases, valuation bonuses for green dwellings). Today, in the Netherland various pilots and plan are available to facilitate both. Rent increased (in the non-regulated part of the market) are not capped, hence value capturing is sufficiently stimulated. By adding and varying local taxes, the difference between red- and green-labeled homes will be widened, and this will likely increase the valuation gap between both. Dutch real estate appraisers are including energy efficiency into their valuation frameworks and standards. This is further stimulated by the vocal request by Dutch banks that stress the importance of energy efficiency insights of the properties in their lending books, and therefore stress real estate appraisers to further develop these insights within their appraisal reports. Regarding the financing incentives, most banks but also (local) governments have financing instruments and benefits in place with which financing advantages are given to investment in energy efficiency.

France

French energy conservation incentive system

The incentive system for energy modernization is defined by the French State. Following the EU directives, the individual metering of the tenants' energy consumptions is now legally mandatory. Except the legal requirements which defined the energy efficiency standards for new developments, the energy retrofitting of the existing stock is based only on incentives despite the fact that the so-called law, „*Plan de Rénovation Energétique de l'Habitat* (PREH)", voted in 2013 and completed on the 13teen of August 2015 stipulates a total of 500 000 housing units to be retrofitted annually (120.000 in the social housing stock, 380.000 in the privatly owned stock) and an average energy performance of the existing housing stock to equate to 150 kwhep/m²/year in 2025 and 80 kwhep/m²/year in 2050.

The historical analysis of the incentives devoted to energy efficiency shows the growing awareness of the French State about the multidimensional nature and the complexity of a policy targeting a better energy efficiency of the rental existing housing stock as it deals with social, technical, financial and fiscal dimensions. It reflects also its hesitations about the costs to the State budget.

1. Social incentives / to overcome the tenant-landlord dilemma and the individual fragmented ownership of the private rented stock:

a. The law voted on the 23rd of November 2009 (Decree n° 2009-1438), allows the landlord to charge the tenants with half of the energy savings for a max. period of 15 years (in fact from 0,40 to 0,60 €/m²/year representing a rent increase between 5% and 10%). A preliminary agreement between the parties being mandatory, it presupposes a social know-how and a common interest.

b. Facing an old population of individual natural landlords, on the 17teen of August 2015, the French state has created a guarantee fund to allow this population to subscribe the 0% eco-loan distributed by the banks. This guarantee fund is also available for low and middle income households (owner-occupiers and natural landlords).

2. Financing incentives / to provide a low cost financing resource.

a. Since 2009, the 0% eco-loan is available for owner-occupiers and private landlords. Its amount and its maturity vary according to the type of works:

- 1 set of measures, max amount 10.000 €, maturity up to 10 years.
- 2 sets of measures, max amount 20.000 €, maturity up to 10 years,
- 3 sets of measures or a global performance (80kwh/m²/year), max amount 30.000 €, maturity up to15 years.

The eco-loan is available only for natural persons (owner-occupiers and landlords).

b. Starting in 2014, facing the difficulties to renovate large housing estates in co-owned lots, the possibility to subscribe collectively an 0% eco-loan is available for condominiums.

3. Fiscal and tax incentives.

a. A reduced V.A.T. rate of 5.5% for energy efficiency works
b. A tax credit system available only for owner-occupiers.

Evaluation of the French energy conservation incentive system

1. Social incentives / to overcome the tenant-landlord dilemma and the individual fragmented ownership of the private rented stock:

a. As it presupposes a preliminary agreement between the parties, the system of sharing 50/50 the energy savings does not work in the private rented housing sector. The main reasons are the lack of private landlords' social and technical know-how and the high tenants' turnover rate (average = 5 years). On contrary, it works in the social rental housing sector, the average stay of an household being 12 years, closer from the maturity of the loan.

b. The guarantee fund is rarely mobilized.

2. Financing incentives / to provide a low cost financing resource.

The conditions of the 0% interest eco loan are adapted to finance the average amount of energy efficiency works (20-25.000 € per housing unit). In 2016 and 2017, there were roughly 100 000 subscriptions from which only 3% were taken out by private natural landlords, 30% by private owner-occupiers and 66% by social public and private housing companies. The actual rate of E.E. modernization using the consumption of eco or similar subsidized loan may be measured: owner-occupiers = 0,27% /year, private landlords = 0,09% / year, social landlords = 1,00% / year.

These rates may be doubled as other sources of financing are used by the different owners to get an estimation of the global rate of EE modernization: Owner-occupiers=0,57%/year, private landlords = 0,18% and social landlords = 2% / year.

Nevertheless, there is a remaining qualitative problem. The option of a global performance (max 80kwh/m²/year) is rarely selected in the eco loan by the private landlords while, on contrary, it is one of the financing conditions in the social housing sector.

3. Fiscal and tax incentives.

a. The reduced V.A.T. rate (5.5%) is rather an efficient incentive as it allows to clear some practices of the building sector and it decreases the "black" economy.

Suggestions for an improved incentive structures

1. Equal tax treatment for the landlords and the owner-occupiers. To extend the existing tax credit system to private landlords (tax credit between 15% and 30% of the investment costs related to E.E with a max of 8.000 per person, 16.000 for a couple).

2. The main problem in France is the lack of institutional actors (landlords) in the private rented housing sector. The success of the EE retrofitting in the social housing sector is due to the fact that they are institutional actors with the required know-how. The same sentence may be carried out regarding the profit municipal housing companies managing private rented housing stocks. So it is suggested,

- To stop the existing tax credit system favouring the purchase of new dwellings by individual natural persons and to transfer the released State resources to implement the first suggestion (equal tax treatment for the different owners of the private housing stock).
- To decrease the transaction costs and the level of property taxes on housing for companies.

3. To lead a “carrot and stick” tax policy

- To modulate gradually the level of the property taxes according to the E.P.D. classification of the concerned estates.
- When the EPD of a large multi-family estate is classified in E, F, G to make mandatory the presentation of the E.E. project in the assembly of the co-owners
- To increase the mandatory legal reserve for extraordinary maintenance in the condominiums up to 1% (per year) of the replacement value of the estate.
- As it’s already the case in the social housing sector, to forbid the selling of the dwellings classified in F and G.

4. To propose a strong operational support to private natural landlords

- To reinforce the role of the public platforms which integrate the financing, the negotiation of collective eco-loan for the condominiums and the follow-up of the building works.
- In order to ensure the quality of the building works to strictly preselect the project designers and the building companies which will be powered by the public platforms, to be more stringent when accrediting the compliance of the building companies with the present label R.G.E.

Best case incentives/ideas

Among others the following elements to complete the **“incentive structure”** are discussed in France:

- The modulation of property tax according to EPD
- A simplification of the 0% eco-loan to favor its subscription.
- The extension of the competences of the local public platform supporting private owners to facilitate their acting out.
- To standardize and expend massively *« simple »* energy efficiency works (roof insulation, change of the heating equipment...) to lower the investment costs through significant economies of scale.
- To renew the E.P.D. calculation method by the end of 2018 to make it more reliable for natural persons.
- To improve the so-called label R.G.E. („Reconnu Garant de l’Environnement“), a building companies and designers accreditation, criticized by the consumer associations.

Summary

Table 3 both summarizes some important incentive structures and evaluates their effects upon energy conservation incentives.

A general conclusion is that within all participating countries there are clear shortcomings of incentives for energy conservation that comply with the energy conservation goals of the countries dealt with in the RentalCal project.

Table 3: Energy conservation incentive structures

Country	Present incentives structures	Evaluation
Germany	1. Modernization cost recovery: The landlord can charge up to 11% of energy modernization costs per year on top of the rent for an unlimited period 2.Rent increase: The landlord can increase rent up to a "reasonable" market price benchmark" 3.Rental table bonus for low heat consumption 4. KfW loans for EE modernization and new construction 5.EE- programs of the federal states for specific issues (e.g. PV installation) 6.Bonus for PV produced electricity offered to tenants	Modernization rate is 1%/a (IWU 2018) and much behind what is necessary to achieve the climate protection goals of energy concept 2020 and 2050. The existing financial incentive instruments (e.g. subsidies) are not sufficient for reaching the envisaged modernization target rate of 2%/a neither for the total building stock nor for the rental building stock. In competitive markets the landlords cannot raise the rent up to the 11% limit. Besides aspects of profitability other obstacles prevent the success: lack of knowledge and interest in EE or other investment priorities.
Poland	Building codes for new buildings are strong. For renovation of old buildings:16% subsidy to the loan conditionally that energy consumption is reduced by 25%; 15% subsidy to the loan for buildings constructed before 1961 improving energy efficiency by more than 10%. Energy Performance Certificate scheme or Green Premium don`t play nay role. Landlord can increase the rent by 10% of energy conservation investment costs.	In the cities a typical rental building is in historical preservation areas, where it is difficult to reach the 25% energy efficiency improvement, that triggers the 16% subsidy. There is no special incentive for owners of rented apartments.
Czech Republic	New green energy scheme - direct subsidy max. 50 % for family houses and 25% -30% for multifamily houses and apartment blocks in Prague. Panel 2013+/ - long term low interest loans for multifamily houses. Up to 90 % of eligible costs in case of de minimis regime otherwise up to 75 %. Interest rate: 1,12 % for 10 years loan, 2,12 % for 20 years loan and 3,12 % for 30 years loan (*Source SFRB June 2018*) Specific energy requirements linked to releas-	The incentives are sufficient to exploit a big part of the cost-effective energy saving potential. However despite this, large cost-efficient energy saving potential still remains unexploited.

	ing subsidies. IROP funding scheme for multifamily buildings outside Prague.	
Spain	Building codes with minimum requirements to technical efficiency of energy conservation. Can subtract 10% of energy conservation investment from income? Coming reform?, where energy efficient houses will get a reduction in property tax.	There is a lack of incentive structures in the energy conservation policy in Spain.
UK	Incentive for using renewable energy for heat.	No efficient heat conservation incentive structures in the UK
Denmark	Rather strong building code requirements. But in connection to renovation it is possible to repair instead of renovate, and in that way "escape" living up to the renovation building code. A system with a 2-4% investment subsidy for heat conservation purposes. This subsidy is being removed in the last energy agreement in the parliament. Heat conservation incentives are in this agreement almost not existing, and policies are being discussed in the public.	No efficient heat conservation incentive structures, especially in the district heating areas, due to high fixed tariffs.
Netherlands	Since May 2016 Dutch landlords can apply for the so called 'Energie Prestatie Vergoeding (EPV)' (energy performance allowance), which is a subsidy that is granted if rental home are retrofitted to passive homes (zero net energy use). This subsidy helps them to recover some of their retrofit investment. After retrofits, rents can be adjusted to new market levels. As long as rents are over 710 euros a month, no rent caps apply. Below 710 euros a month, housing rents are regulated by a point system. Energy efficiency improvement increase the point score, and thereby the rent level.	The scope and impact of the EPV is rather limited, as passive home refurbishments are a small minority within the Dutch housing market. Due to the upcoming transition of gas heating, the Government is currently designing new incentives schemes that will trigger retrofits on a larger scale.
France	Building envelope components of new residential buildings must comply with minimum standards (component specific U-values or maximum energy demand for the whole building) defined in the so-called "Réglementation Thermique (RT2012) (max. 50kwh/m²/year) In case of modernization of a whole housing building, the new components of the existing building must comply with the maximum	The capacity to get an agreement depends, among others, on the social know-how of the landlord to negotiate. The more institutional, the better. The less professional, the worst. (95% of the private rented stock is owned by natural persons owning few dwellings).

	energy demand for the whole building prescribed in the “Loi de transition énergétique” (max. 80kwh/m²/year) to get the corresponding eco-loan (0% interest rate) or special financing (P.A.M.) There is no mandatory legal technical requirement for retrofitting. After a premilinary agreement with its tenants, a landlord can charge 50% of the energy savings for a max period of 15 years (in fact a rent increase between 0,30-0,50 € /m²/month) The eco-loan with 0 interest rate is available for owner-occupiers and landlords. Its amount and its term vary according to the type of works: - 1 set of measures, max amount 10.000 €, 10 years. - 2 sets of measures, max amount 20.000 €, 10 years, - 3 sets of measures or a global performance (80kwh/m²/year), 15 years. Since 2014 a tax credit system exists, available for owner-occupiers, tenants and free occupiers. Landlords are not eligible. Its amount varies from 15 to 30% of the investment costs according to the type of works up to an amount of 8.000 € per adult, 16.000 € for a couple. V.A.T. reduced rate ; 5,5%	The rate of modernization using eco-loan or similar loan may be measured comparing with the total housing stocks of the different segments: -Owner-occupiers: 19.908.000 units, 0.27% /year. Private landlords: 6.796.000 units, 0.09% / year. Social landlords: 5.386.000 units, 1.00% / year. Estimating the other existing sources of funding , the actual global rate of modernization may be doubled : Owner-occupiers:0,54% Private-landlords:0,18% Social landlords: 2%

Table 2: Best case ideas and suggested future incentive structures

Country	Best case/ ideas	Proposals for future incentive structures
Germany	1.EE standards coupled with grants & low interest loans 2.Tax deduction (10% of investment costs) 3.Market premiums for EE investment	1.High standards for new constructions (Nearly zero-energy buildings) 2.Modernisation backed by increased subsidies and grants and 3. Tax deduction for EE modernisation 4. Green premium in rental tables and 5. Green financing beyond the KfW programmes for those financing schemes that don't use KfW programmes
Poland	Energy audits linked to loan application and 100% financing and 20 years loans. VAT tax deduction for investment in energy renovation of residential buildings.	- Reform of the existing financing scheme in order to support energy efficiency improvements in flats independent on location and in buildings located in historical preservation areas.
Czech republic	Energy consultancy program EFEKT. Education and training of professional and nonprofessional audience. Assist cities and regions in energy management. Projects for cities and villages and small business projects	-Monitoring energy efficiency after energy efficiency measures is taken. -Focus on long term perspective -Remove barriers for decentralized energy production
Spain	Reduced interest rates for long term loans. Make it easier for the landlord to include energy conservation costs in the rent. Collaboration with private sector multiplies the effects of public investments.	Elimination of fixed tariffs. Increase grants. Tax deduction measures. Simplification of administration. Low interest loans. Consultancy services should be deductible from tax.
UK	Low interest long term loans for energy efficiency investments plus free energy consultancy. Improve the energy conservation incentive of the Landlord.	In general the UK needs formal incentive structures for heat conservation. Increase the possibilities for landlords to raise the rent, when the energy efficiency of an apartment is improved.
Denmark	- A combination of energy consultant certification + 30% public investment subsidy for average consumers. - 50% investment subsidy for pensioners with low income getting public heat cost payments.	-Zero tax on wind power for heat. - Abolish fixed heat tariffs - Long term (30/40 years) low interest loans (2% fixed interest rate) for energy conservation measures certified by an energy consultant. Subsidy to cover a part (50%) of the energy consultancy costs. - Tariffs in district heating areas linked to the *smart energy system value* of

		energy conservation.
Nether-lands	In the Netherlands a broad coalition of various housing market stakeholders (banks, realtors, governments, construction firms) are currently developing a new incentives scheme to enhance the transition away from gas heating homes. This new plan will be implemented in 2019 and also involves green financing incentives that are linked to the home instead of the homeowner. This will help to scale up energetic retrofits.	Within the housing market, the social housing landlords have worked on 'energy plans', which map their aspired progress regarding energy efficiency gains in the future. It is important that also private landlords are included in this debate. Thus far the national body of private housing landlords has been reluctant. But with the right mix of financing incentives and government subsidies and penalties more momentum can also be generated in private rental homes.
France	The French incentive system is relatively complete except the aspects related to the tax credit. It's rather more important to combine altogether the different incentives. The main source of weakness being the prevalence of natural persons as landlords in the private rented housing sector, it's important to promote the return of private institutional actors on the rented housing market. To extend and reinforce the role of the "Plateforme territorial de transition energétique" which may provide a global and integrated support to natural landlords To lead a carrot and stick policy.	- Equal tax treatment for the landlords and the owner-occupiers. To extend the existing tax credit system to private landlords (tax credit between 15% and 30% of the investment costs related to E.E with a max of 8.000 per person, 16.000 for a couple). - To stop the existing tax credit system favouring the purchase of new dwellings by individual natural persons. - To decrease the transaction costs and the level of property taxes on housing - To provide a public guarantee on eco loans to ageing natural landlords owning rental dwellings in condominiums. - To reinforce the role of the platform including the financing, the negotiation of collective eco-loan for the condominiums and the follow-up of the building work. - To modulate the level of the property taxes according to the E.P.D. classification. - When the EPD of the estate is classified in E, F, G to make mandatory the presentation of the E.E. project in the assembly of the co-owners in large estates. - To increase the mandatory legal reserve for extraordinary maintenance in the condominiums up to

		1% per year of the replacement value of the estate.